Serial No.	H-V036E-4

Butterfly Valves

Type 57 : 40mm(1 1/2") - 350mm(14")
Type 56 : 400mm(16")

User's Manual

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ASAHI AV VALVES

(1) General Operating Instructions

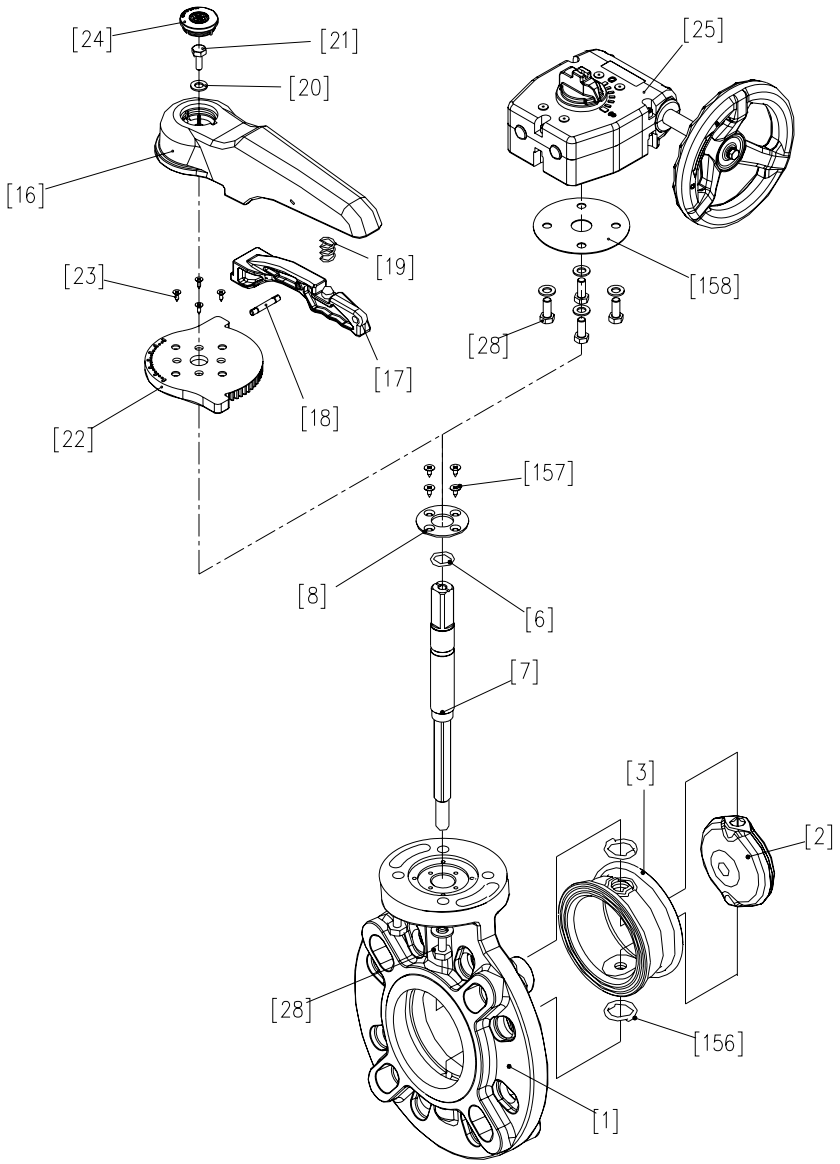
- ○ Operate the valve within the pressure Vs temperature range.
  (The valve can be damaged by operating beyond the allowable range.)
- ○ Select a valve material that is compatible with the media, refer to "CHEMICAL RESISTANCE ON ASAHI AV VALVE".
  (Some chemicals may damage incompatible valve materials.)
- ○ Do not use the valve on condition that fluid has crystallized.
  (The valve will not operate properly.)
- ○ Do not step on the valve or apply excessive weight on valve. (It can be damaged.)
- ○ Do not exert excessive force in closing the valve.
- ○ Make sure to consult a waste treatment dealer to dispose of the valves.
  (Poisonous gas is generated when the valve is burned improperly.)
- ○ Allow sufficient space for maintenance and inspection.
- ○ Keep the valve away from excessive heat or fire. (It can be deformed, or destroyed.)
- ○ Do not change or replace valve parts under line pressure.
- ○ The valve is not designed to bear any kind of external load. Never stand on or place anything heavy on the valve at anytime.
- ○ Using a positive-pressure gas with our plastic piping may pose dangerous condition due to the repellent force peculiar to compressed fluids, even when the gas is under the same pressure as water. Therefore, be sure to take the necessary safety precautions such as covering the piping protective material. For inquiries, please contact us.

(2) General Instructions for Transportation, Unpacking and Storage

- ○ Keep the valve in its original packaging until needed for installation.
- ○ Avoid contact with any coal tar creosote, insecticides, vermicides or paint.
  (The force of swelling may damage the valve.)
- ○ The valve is not designed to handle any kind of impact. Avoid throwing or dropping the valve.
- ○ Avoid scratching the valve with any sharp object.

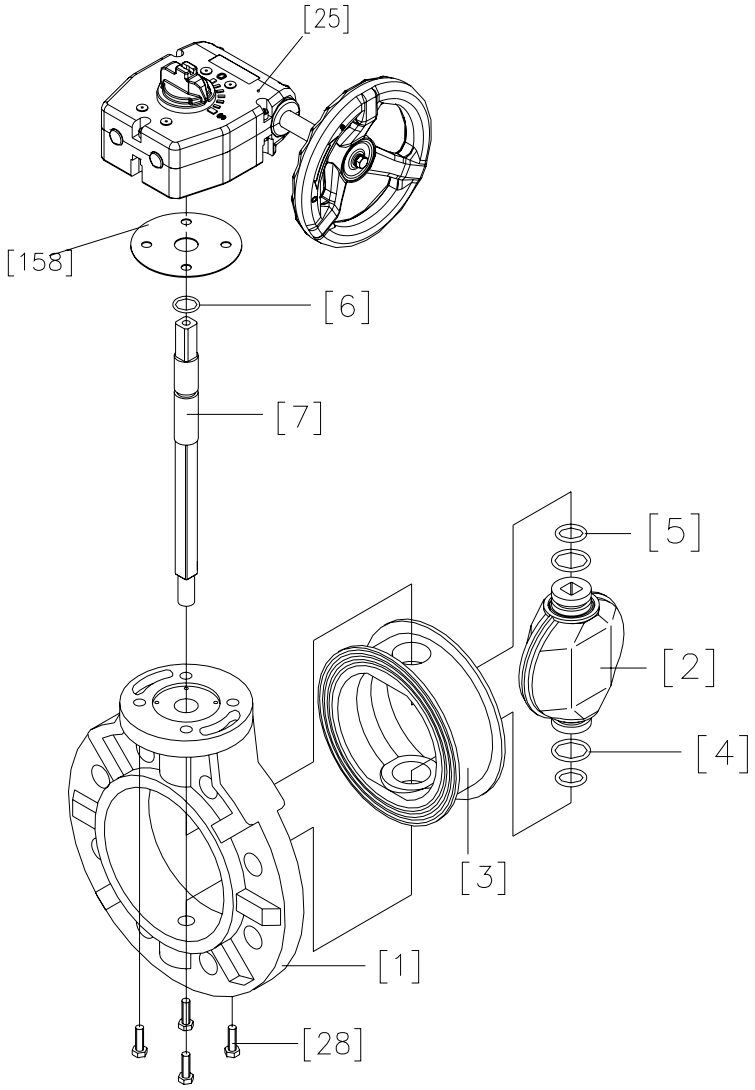
(3) Names of Parts

Type57: 40mm (1-1/2") – 350mm (14")



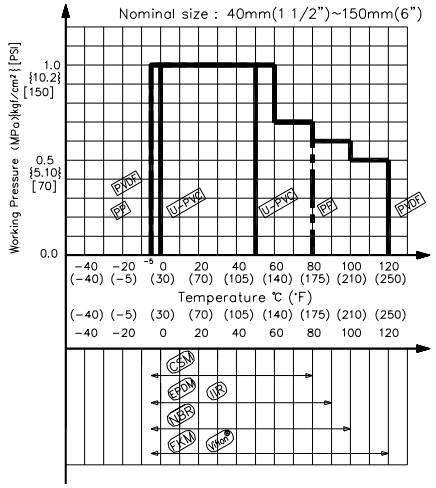
No.	Description	No.	Description	No.	Description
[1]	Body	[17]	Handle Lever	[24]	Cap (A)
[2]	Disc	[18]	Pin	[25]	Gear Box
[3]	Seat	[19]	Spring	[28]	Bolt (C)
[6]	O-Ring (C)	[20]	Washer (A)	[156]	Stabilization Ring
[7]	Stem	[21]	Bolt (A)	[157]	Screw (F)
[8]	Stem Holder (A)	[22]	Locking Plate	[158]	Gasket (L)
[16]	Handle (A)	[23]	Screw (B)		

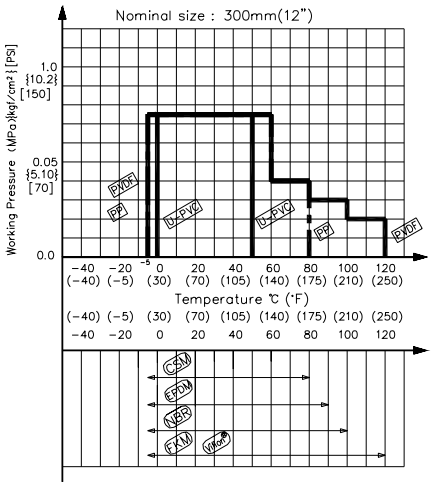
Type56 (Gear Type): 400mm (16”)

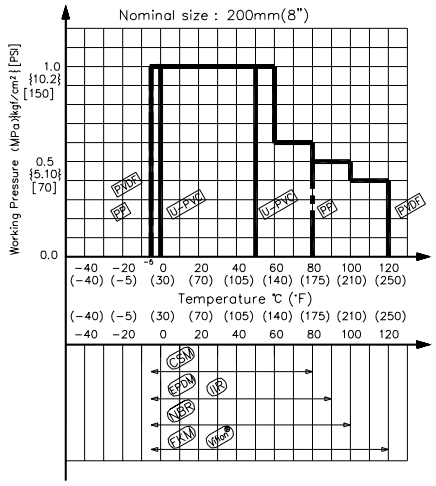


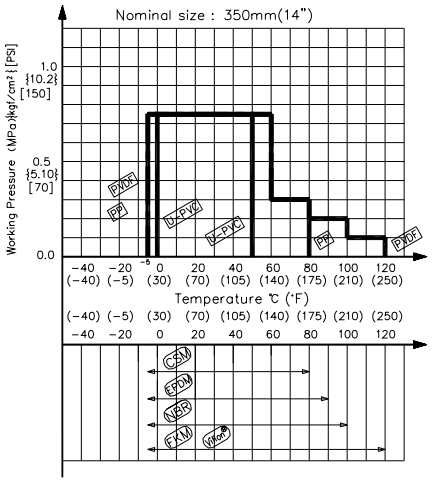
No.	Description	No.	Description	No.	Description
[1]	Body	[5]	O-Ring (B)	[28]	Bolt (C)
[2]	Disc	[6]	O-Ring (C)	[158]	Gasket (L)
[3]	Seat	[7]	Stem		
[4]	O-Ring (A)	[25]	Gear Box		

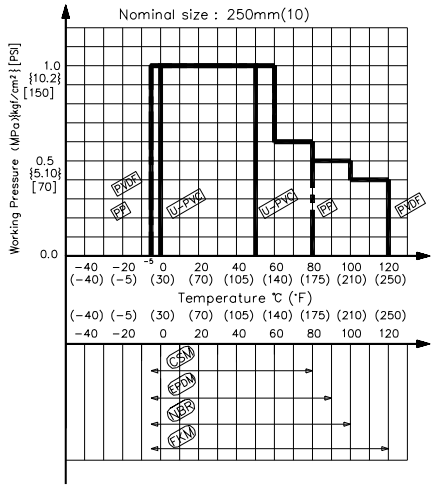
(4) Comparison between Working Temperature and Pressure

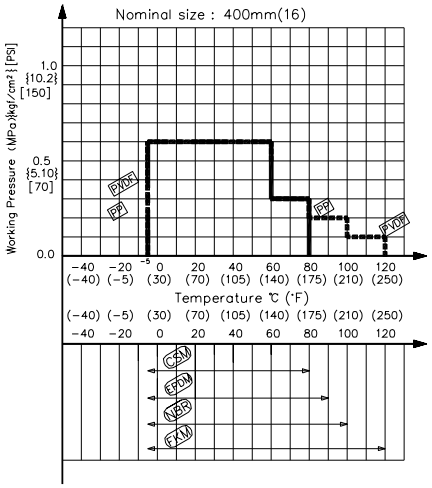












Caution

Do not operate the valve beyond the range of working temperature and pressure.
(The valve can be damaged.)

(5) Installation Procedure

⚠ Caution

1) The valve disc is sent in the position indicated by. solid lines in Fig. 5-1 prior to shipment from the factory. If the valve is opened or closed after unpacking, it must be reset in this position before installation. Failure to do so will result in damage to the surface of the valve seat during handling and installation.
2) The valve most not be dropped or thrown against other objects, since the sealing surface of the disc and the sealing surface of the valve seat may easily be damaged.
3) Care must be used during piping installation to ensure that the pipes or flanges are properly aligned so that the valve disc does not contact them in any setting. Misalignment as in Fig.5-2 will result in damage to the valve.
4) The installed valve must never be opened or closed when foreign matter such as sand is present in the pipeline.

Fig. 5-1

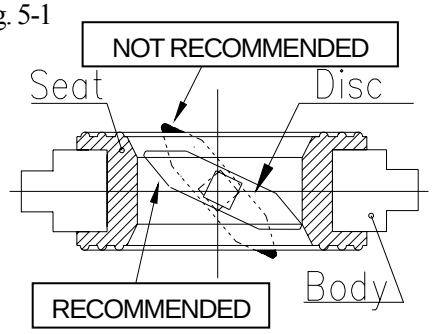
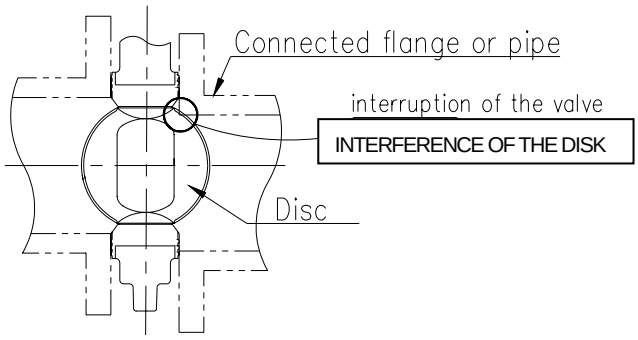
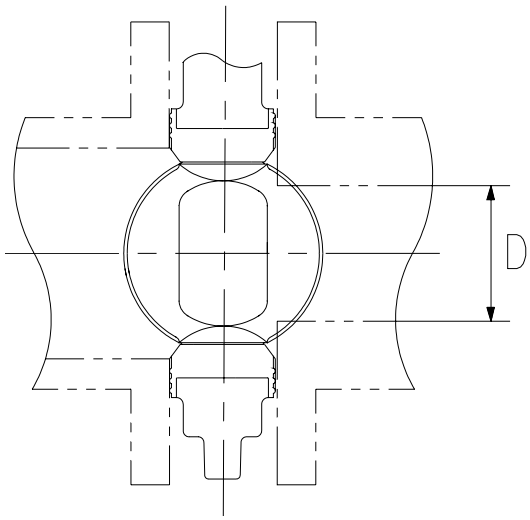


Fig. 5-2



In case of the thick wall of the connection part (flange and pipe) is too thick, shave the flange or the pipe inside in order to avoid the contact of pipe and disc. If inside diameter of the connection part is larger than size D, shaving is not necessity.



Nominal Size	Diameter D
40mm (1 1/2”)	30mm (1.18”)
50mm (2”)	44mm (1.73”)
65mm (2 1/2”)	67mm (2.64”)
80mm (3”)	71mm (2.80”)
100mm (4”)	90mm (3.54”)
125mm (5”)	115mm (4.53”)
150mm (6”)	136mm (5.35”)
200mm (8”)	179mm (7.05”)
250mm (10”)	237mm (9.33”)
300mm (12”)	289mm (11.38”)
350mm (14”)	340mm (13.39”)
400mm (16”)	370mm (14.57”)

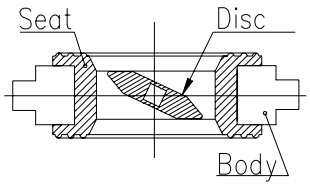
Necessary items

- Torque Wrench
- Spanner Wrench

Procedure

Caution

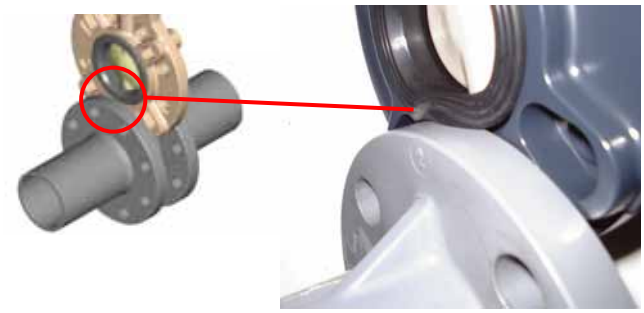
The disk [2] is prevented from overflowing. (The disk [2] is damaged.)



1) Install the valve between flanges and open the valve slightly.
2) Insert bolts, set nuts and washer and tighten the bolts and nuts temporarily by hand.

Caution

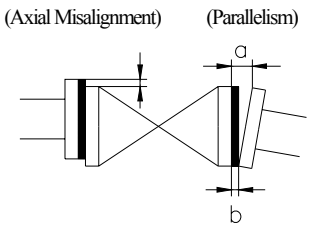
When you insert a valve between flanges, please insert after extending the fields of flanges fully.
(If you insert a valve by force without fully extending fields of flanges, a liner may be turned over and suffer a crack..)



The parallelism and axial misalignment of the flange surface should be under the values shown in the following table to prevent damage the valve. (A failure to observe them can cause destruction due to stress application to the pipe)

Unit : mm (inch)

Nom. Size	Axial Misalignment	Parallelism (a – b)
40 - 80mm (1 1/2”-3”)	1.0 (0.04)	0.8 (0.03)
100-150mm (4”-6”)	1.0 (0.04)	1.0 (0.04)
200-400mm (8”-16”)	1.5 (0.06)	1.0 (0.04)

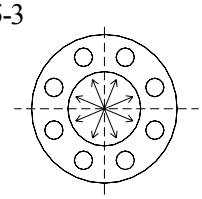


3) Tighten the bolts and nuts gradually with torque wrench to the specified torque in a diagonal manner. (Refer to Fig. 5-3)

Recommended torque value Unit: N-m {kgf-cm} [lb-inch]

Nom. Size	40mm (1 1/2”)	50, 65mm (2”,2 1/2”)	80, 100 mm (3”,4”)
Torque value	20.0 {204} [177]	22.5 {230} [200]	30.0 {306} [266]

Fig. 5-3



Nom. Size	125, 150 mm (5”,6”)	200, 250 mm (8”,10”)	300, 350 mm (12”,14”)	400 mm (16”)
Torque value	40.0 {408} [355]	55.0 {561} [488]	60.0 {612} [532]	80.0 {816} [710]

Caution : Avoid excessive tightening. (The valve can be damaged.)

<JIS Standard>

Dimension of Insert Bolt A

Nom. Size		Bolt (Minimum)			Nut	Washer
		d	L	S		
40mm	1 1/2"	M16	125mm (4.92")	35mm (1.38")	M16	16mm (0.63")
50mm	2"		125mm (4.92")			
65mm	2 1/2"		130mm (5.12")			
80mm	3"		130mm (5.12")			
100mm	4"		145mm (5.71")			
125mm	5"	M20	165mm (6.50")	40mm (1.57")	M20	20mm (0.79")
150mm	6"		175mm (6.89")			
200mm	8"		190mm (7.48")			
250mm	10"	M22	220mm (8.66")		M22	22mm (0.87")
300mm	12"		245mm (9.65")			
350mm	14"		250mm (9.82")			
400mm	16"	M24	300mm (11.81")	45mm (1.77")	M24	24mm (0.94")

Dimension of Insert Bolt B

Nom. Size		Bolt (Minimum)				Nut	Washer
		d_1	L_1	S_1	S_2		
400mm	16"	M24	120mm (4.72")	45mm (1.77")	27mm (1.06")	M24	24mm (0.94")

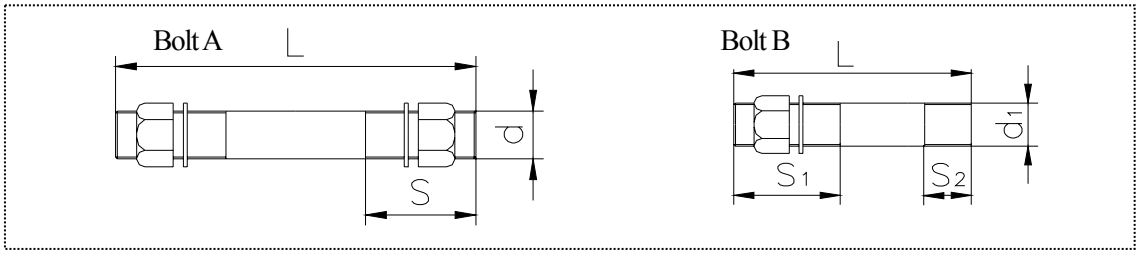
<ANSI Standard>

Dimension of Insert Bolt A

Nom. Size		Bolt (Minimum)			Nut	Washer
		d	L	S		
40mm	1 1/2"	5/8"-11	125mm (4.92")	35mm (1.38")	5/8" - 11	5/8" Flat (0.63")
50mm	2"		125mm (4.92")			
65mm	2 1/2"		130mm (5.12")			
80mm	3"		130mm (5.12")			
100mm	4"		145mm (5.71")			
125mm	5"	3/4" - 10	165mm (6.50")	40mm (1.57")	3/4" - 10	3/4" Flat (0.79")
150mm	6"		175mm (6.89")			
200mm	8"		190mm (7.48")			
250mm	10"	7/8" - 9	220mm (8.66")		7/8" - 9	7/8" Flat (0.87")
300mm	12"		245mm (9.65")			
350mm	14"		250mm (9.82")			
400mm	16"	1" - 8	300mm (11.81")	45mm (1.77")	1" - 8	1" Flat (0.94")

Dimension of Insert Bolt B

Nom. Size		Bolt (Minimum)				Nut	Washer
		d_1	L_1	S_1	S_2		
400mm	16"	1" - 8	120mm (4.72")	45mm (1.77")	27mm (1.06")	1" - 8	1" Flat (0.94")



Caution

The gasket is unnecessary. (The seat [3] carries out the role of the gasket.)

(6) Operating Procedure

Caution

The lever operation and the steering wheel operation are done by the hand.

1) Open and close the valve by turning handle smoothly.
(Turn clockwise to close and counterclockwise to open.)
2) In case of lever type (40-200 mm{1 1/2"-8"}), the direction of handle is same as the disc as shown in Fig. 6-1.
   - For the full-shut (Close) position, the handle is perpendicular to the piping axis direction.
   - For the full-opened position, the handle is parallel to the piping axis direction.

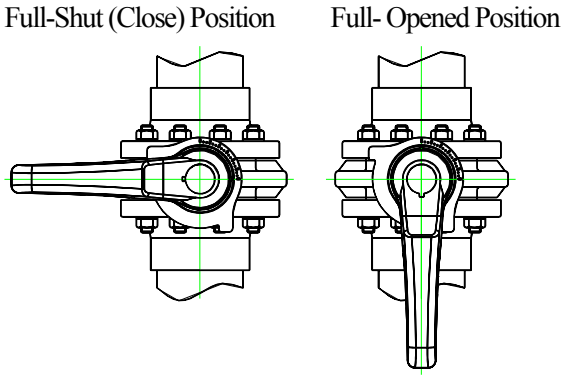


Fig. 6 – 1

3) In case of gear type (40-400 mm {1 1/2"-16"}), the indicator shows the position of the disc on the top of gear box. (Fig.6-2)
   - For the full-shut (close) position, the indication shows Shut (S).
   - For the full-opened position, the indication shows Open (O).

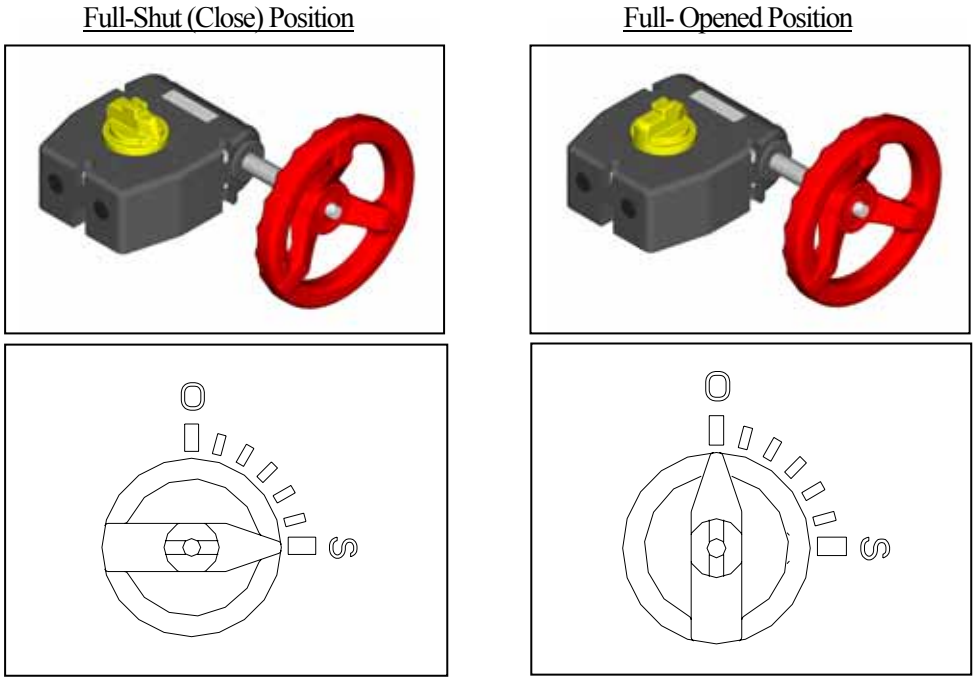


Fig. 6 – 2

Technical Data for Operation

Nom. Size	Stem Torque (N·m)		Required Hand-Wheel Torque (N·m)		Length of Lever and Diameter of Handle (mm)		Required Operating Force (N)	
	Peak	Seal	Peak	Seal	Lever	Gear	Lever	Gear
40mm (1 1/2")	5	5	0.4	0.4	220	80	23	5.0
50mm (2")	10	10	0.8	0.8	220	80	46	10
65mm (2 1/2")	15	15	1.2	1.2	220	80	68	15
80mm (3")	20	20	1.7	1.7	250	80	80	22
100mm (4")	30	30	2.5	2.5	250	80	120	32
125mm (5")	65	40	5.4	3.3	320	80	125	42
150mm (6")	85	65	7.0	5.4	320	80	205	68
200mm (8")	190	165	16	13	420	80	395	163
250mm (10")	300	250	25	21	-	80	-	263
300mm (12")	370	330	25	22	-	150	-	147
350mm (14")	420	400	28	27	-	150	-	180
400mm (16")	930	780	63	53	-	150	-	353

Note : Data mentioned in the table above is reference only.

These data are measured in standard condition and it slightly differs depending on conditions.

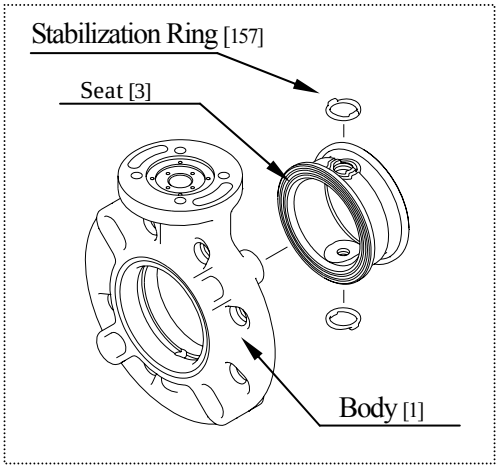
(7) Disassembly and Assembly Procedure for Parts Replacement

Necessary items

- Protective Gloves
- Goggles
- Spanner Wrench
- Vise
- Grease (Silicone)
- Square Lumber
- Circular Stick (Plastic or Wood)
- Pressing Machine
- Hammer
- Screw Driver (+)
- Screw Driver (–)

Caution

Wear protective gloves and goggles in case some dangerous fluid remains in the valve body.
(You might be injured by working without them.)
The handle part can be removed with line pressure present. The locking plate [22] can't be removed with line pressure present. If locking plate [22] needs to be removed, there can not be line pressure present.



<< Disassembly >>

Procedure

1) Drain fluid completely from the pipeline.
2) Leave the valve slightly opened.
3) Loosen the connecting bolts and nuts.
4) Remove the valve from the pipeline.

Lever Type <Nominal size 40mm-200mm (1 1/2"-8")

5) To remove handle[16], first take off the cap [24] by using screw driver (–) and release bolt [21] by using socket wrench, then pull up the handle [16] while holding handle lever[17].
6) To take off locking plate [22], release 4 self-tapping screws [23] by using screw driver(+) and take off stem holder[8].

Gear Type <Nominal size 40mm-400mm (1 1/2"-16")

5) Loosen set bolt [28] for gear box [25] and pull off the gear box upward with gasket [158].
6) <Nominal size 40mm-350mm (1 1/2"-14") *It advances 400mm (16") as follows.>
To take off stem holder [8]. Release 4 tapping screws [157] by using screw driver (+).

Lever & Gear Type

7) Hold flat surface of Stem [7] with vise and pull off valve body[1].
8) (A) Set the valve body [1] on square lumbers at edges of valve body on the press and put a lumber on the disc[2]. Operate the press slowly and push disc [2] and seat [3] out if the valve body[1].
(B) Set the valve body [1] on square lumbers at edges of valve body and put a circular stick on the disc[2]. Strike the circular stick with a hammer and remove disc [2] and seat [3] out of the valve body[1].
9) Set the disc [2] parallel to the working desk to half opened position. Push the seat[3], and remove the disc[2].
10) <Nominal size 40mm-350mm (1 1/2"-14") *It advances 400mm (16") as follows.>
Remove the stabilization ring [156] and the O-ring(C) [6]from the stem[7].

<< Assembly >>

Procedure

1) Put the O-ring(C) [6]onto the stem[7].
2) Before starting assembly, grease (Silicone) should be spread on the top and bottom disc[2], the stem hole of the seat [3] and the stem O-ring(C)[6].
3) <Nominal size: 40mm-350mm(1 1/2"-14") *It advances 400mm (16") as follows.>
   Insert the stabilization ring [156] into the upper side slot of the seat [3]. The upper side slot of seat [3] has larger stem hole than lower side.

⚠ Caution

Make certain tabs are properly aligned. Both upper and lower stabilization ring [156] are identical.

4) Insert the stem [7] about 1/3 into the body [1]. Install the seat [3] into the body [1] by aligning upper seat stem hole with the stem [7].
5) Collapse the left or right side of seat [3] in towards opposing side exposing lower stem hole by screw driver (–).
   <Nominal size: 40mm-350mm (1 1/2"-14") *It advances 400mm (16") as follows.>
   Install the stabilization ring [156] into the body [1] aligning tabs of ring with center groove of the body [1]. Seat [3] tabs should line up when bottom of seat is reset into body of valve.
6) Remove the stem [7].
7) Reset the seat [3] into the body [1].

⚠ Caution

<Nominal size: 40mm-350mm(1 1/2"-14") *It advances 400mm (16") as follows.>
Make certain stabilization rings [156] sit flush inside of seat [3] with tabs properly aligned. If stabilization rings [156] are not installed correctly, the seat [3] will not sit in the body [1] properly. This is indicated by a visible gap between seat [1] and body [1], and disc [2] will not fit properly.

8) To install disc [2], make certain valve size on disc [2] is in upright direction. Install top of disc [2] into seat [3] aligning with upper stem hole.
9) Rotate disc [2] to 75% (Approx.) closed position and install stem [7] about 50% into the body [1].
10) Press in bottom of disc [2] to lower stem hole.

⚠ Caution

Look into valve body [1] to be certain full square in disc [2] is centered with upper valve [1] stem hole. If not, repeat step 8), 9), and 10).
Make certain line scribed on top of stem [7] indicates disc [2] position while installing stem [7].

11) Install the stem [7] into valve body [1] and disc [2]. If disc [2] is properly aligned, stem [7] should slide in smoothly. If stem [7] does not slide in smoothly, report from step 8) to properly align the disc [2] in the valve body [1].
12) <Nominal size: 40mm-350mm(1 1/2"-14") *It advances 400mm (16") as follows.>
    Install stem holder [8] onto valve body [1] with countersunk holes facing up using 4 screws [157].
13) To install lever or gear operator reverse disassembly procedure #5).
14) After assembly, make sure that the valve can be fully opened and closed smoothly.

(8) Installation procedure for handle

Necessary items

- ●Plastic Hammer
- ●Socket Wrench
- ●Screw Driver (–)
- ●Goggles
- ●Protective Gloves

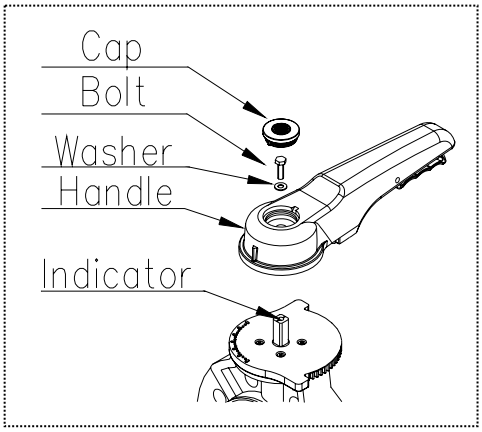
⚠ Caution

Do not give any unjust force to cap, in installing or removing the cap.
(It can be damaged)

《Installation》

Procedure

1) Install the handle on the stem. Set the direction of handle in the indication line at the top of stem.
2) Fix the handle at the top of stem with the attached bolts and washer by using socket wrench.
3) Set the convex part at the side of the cap and the concave of the handle, and set in the cap by striking lightly by using a plastic hammer.

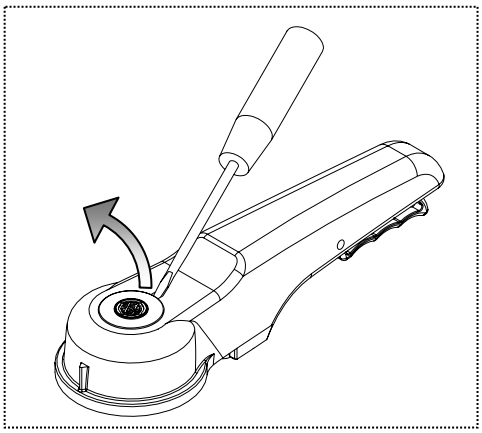


Nominal Size	40-100mm (1 1/2"-4")	125-200mm (5"-8")
Bolt Size	M6×15L	M8×15L
Socket Size	10	13

《Remove》

Procedure

1) To remove the cap, push up the side of the cap by using screw driver (–) .
2) Loose the bolts and washer by using socket wrench, then remove the handle.

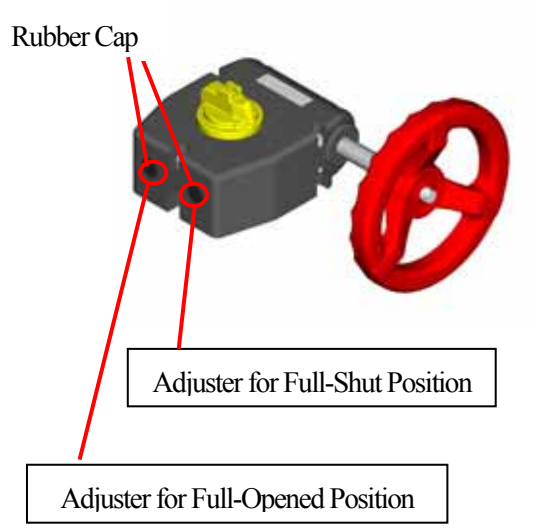


(9) Adjustment Procedure for Stopper Gear Type

Necessary Items

- Hexagon Wrench

The adjustments for full-opened and full-shut position are step-less, and it can be done with the stopper adjuster.



Adjustment for Full-shut (Full-opened) position

1) Remove the rubber cap of Full-closing (Full-opening) adjuster.
2) Loosen the first stopper hex-bolt completely by Hex. Wrench.
3) Adjust the disc of valve to required position.
4) Tighten the stopper hex-bolts.
5) Put the rubber cap of Full-closing (Full-opening) adjuster back on gearbox.

(10) Inspection Items

Inspect the following items.

(1)	Check for flaw, crack, or deformation on the valve.
(2)	Check for leaks to the outside.
(3)	Check for the deformation of seat due to improper installation of valve.
(4)	Check for the smoothness of handle operation..

(11) Troubleshooting

Phenomenon	Cause	Treatment
Fluid is not stopped in the full closed position at the seat.	1) The stopper is not set correctly. 2) The seat is damaged or worn. 3) Foreign materials are caught. 4) The disc is damaged or worn. 5) The connecting bolts are over tightened or tightened unevenly.	Adjust the stopper. Replace the seat. Clean it up. Replace the disc. Adjust and retighten.
Fluid leaks to the outside.	1) The seat is damaged or worn. 2) The connecting bolts are not tightened in proper torque or evenly.	Replace the seat. Adjust and retighten.
The handle does not work smoothly.	1) Foreign materials have adhered. 2) The gear box is damaged. 3) The connecting bolt is over tightened.	Clean it up. Repair or replace. Adjust and retighten.
Valve does not operate	1) The gear box is damaged 2) The stem is damaged.	Repair or replace. Replace the stem.

(12) Handling of Residual and Waste Materials

⚠ Caution

Make sure to consult waste treatment dealer to dispose valves.
(Poisonous gas is generated when the valve is burned improperly.)

(13) Inquiries

ASAHI ORGANIC CHEMICALS INDUSTRY CO., LTD.

Nobeoka Head Office : 2-5955, Nakanose- Cho, Nobeoka –City, Miyazaki- Pref. , Japan.
Tel : (81) 982-35-0880 Fax : (81) 982-35-9350

Tokyo Head Office : (Furukawachiyoda Bldg.) 15-9, Uchikanda 2- Chome, Chiyoda-Ku, Tokyo, Japan.
Tel : (81) 3-3254-8177 Fax : (81) 3-3254-3474

Singapore Branch Office : 16 Raffles Quay, #40-03 Hong Leong Building, Singapore 048581.
Tel : (65) 220-4022 Fax : (65) 324-6151

Europe Representative Office : Kaiser-Friedrich-Promenade 61 D-61348 Bad Homburg v. d. H. Germany.
Tel : (49) 6172-9175-0 Fax : (49) 6172-9175-25

Shanghai Branch Office : Room 1301-P Shanghai Kerry Center, 1515 Nanjing Xi Road, Shanghai China
Tel : (21) 5298-6900 Fax : (21) 5298-6556

ASAHI /AMERICA Inc. :35 Green Street P.O.Box 653 , Malden, Massachusetts 02148 U.S.A.
Tel : (1) 781-321-5409 Fax : (1) 781-321-4421

Distributor

Butterfly Valves

40mm-350mm(1 1/2”-14”) Type 57

400mm(16”) : Type 56

ASAHI *AV* VALVES

Information in this manual is subject to change without notice.

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